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EXAMINER	
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ART UNIT	PAPER NUMBER
3664	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/801,096	BASIR ET AL.	
	Examiner	Art Unit	
	RONNIE MANCHO	3664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Breed et al (6141432).

Regarding claim 10, Breed (abstract; col. 13, lines 1-40) disclose the vehicle occupant classification system comprising:

an image sensor (CCD, col. 13, lines 1-12) for capturing an image of a plurality of occupant areas (abstract); and

a processor 120 dividing each of the plurality of occupant areas in the image into a plurality of subimages (image data from CCD is digitized), the processor 120 analyzing the subimages to determine a classification of the occupants in each of the plurality of occupant areas (col. 16, lines 51-61).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamei et al (5528698) explained by Yuhara et al (6548804) in view of Breed et al (6324453).

Regarding claim 1, Kamei et al (figs. 1-3, 6-8) disclose a method for classifying an occupant including the steps of:

a). capturing an image of an occupant seating area (abstract; col. 3, lines 59-63; col. 4, lines 3-6; col. 5, lines 47-56; col. 6, lines 33-39) in a vehicle;

b). dividing the image into a plurality of subimages of predetermined spatial regions (col. 6, lines 18-39);

c). generating a spatial feature matrix of the image based upon the plurality of subimages (pixels, col. 6, lines 18-39);

d). analyzing the spatial feature matrix (col. 6, lines 11-39); and

e). classifying a plurality of occupants (col. 6, lines 51 to col. 7, lines 14) in the occupant areas based upon said step d).

Kamei discloses pixels and a Sobel filter (col. 6, lines 27-39. A sobel filter inherently divides a captured image into subimages (known as pixels). Applicant is referred to Yuhara (col. 3, lines 10 to col. 4, line 25; fig. 5) who gives more insight about the sobel filter

associated with pixels. Yuhara (fig. 5) shows a captured image which has been divided (segmented) into subimages (pixels) generating a spatial matrix image such as a 3 by 3 or a 200 by 140 or a 10 by 10 matrix of a spatial image. Therefore, Kamei inherently disclose the limitations above.

Kamei discloses stored images of passengers which will imply that the images must have been captured and stored. Kamei is not quite clear about capturing an image of *a plurality of occupant seating areas*; however Breed et al (col. 8, lines 25-27; col. 9, lines 1-5, 10-15, 24-27; col. 10, lines 9-11; figs. 1, 2) discloses capturing an image of a plurality of occupant seating areas. Therefore, it would have been obvious to one of ordinary skill in the art of vehicle occupant identification to modify Kamei as taught by Breed et al for the purpose of providing an occupant vehicle monitoring system which is not affected by temperature or thermal gradients, and to track occupants in a sufficiently short time during a crash, Breed (col. 9, lines 62-67).

Regarding claim 2, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 1 further including the step of processing the image to account for lighting and motion before said step d).

Regarding claim 3, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 1 further including the step of smoothing the classification of the occupant over time.

Regarding claim 4, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 1 further including the step of determining whether to activate an active restraint based upon the classification of said step e).

Regarding claim 5, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 1 wherein said step d) further includes the step of applying expert classifier algorithm to the spatial feature matrix.

Regarding claim 6, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 5 wherein said step d) further includes the step of analyzing the spatial feature matrix based upon a set of training data.

Regarding claim 7, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 6 further including the step of creating the set of training data by capturing a plurality of images of known occupant classifications of the occupant area.

Regarding claim 8, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 5 wherein the expert classifier algorithm includes a neural network.

Regarding claim 9, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 1 wherein the plurality of subimages overlap one another.

Regarding claim 10, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the vehicle occupant classification system comprising: an image sensor for capturing an image of a plurality of occupant areas; and a processor dividing each of the plurality of occupant areas in the image into a plurality of subimages, the processor analyzing the subimages to determine a classification of the occupants in each of the plurality of occupant areas.

Regarding claim 11, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the vehicle occupant classification system of claim 10 wherein the processor determines the classification of the occupant from among the classifications including: adult, child and infant seat.

Regarding claim 12, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the vehicle occupant classification system of claim 11 wherein the processor determines the classification of the occupant from among the classifications including: adult, child, forward-facing infant seat and rearward-facing infant seat.

Regarding claim 13, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the vehicle occupant classification system of claim 10 wherein the processor generates a spatial feature matrix based upon the plurality of subimages.

Regarding claim 14, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the vehicle occupant classification system of claim 13 further including at least one filter generating the spatial feature matrix based upon the plurality of subimages.

Regarding claim 15, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the vehicle occupant classification system of claim 14 further including an image processor for altering the image based upon lighting conditions and based upon motion.

Regarding claim 16, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the vehicle occupant classification system of claim 15 wherein

the processor analyzes the spatial feature matrix to determine the occupant classification using a neural network.

Regarding claim 17, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the vehicle occupant classification system of claim 10 further including a temporal smoothing filter applying a decaying weighting function to a plurality of previous occupant classifications to determine a present occupant classification.

Regarding claim 18, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the vehicle occupant classification system of claim 17 further including a confidence weighting function applied to the plurality of previous occupant classifications to determine the present occupant classification.

Regarding claim 19, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the vehicle occupant classification system of claim 10 further including a plurality of digital filters extracting low-level descriptors from each of the subimages, the processor analyzing the low-level descriptors to determine the classification of the occupant.

Regarding claim 20, Kamei et al (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) disclose the method for classifying an occupant including the steps of:

a). capturing an image of an occupant area (abstract; col. 3, lines 59-63; col. 4, lines 3-6; col. 5, lines 47-56);

b). dividing the image into a plurality of subimages (pixels) of predetermined spatial regions;

c). generating a plurality of low-level descriptors (matrix of pixels) from each of the plurality of subimages;

d. analyzing the low-level descriptors (matrix of pixels); and

e). classifying an occupant in each of the plurality of occupant areas based upon step d).

Kamei discloses pixels and a Sobel filter (col. 6, lines 27-39. A sobel filter inherently divides a captured image into subimages (known as pixels). Applicant is referred to Yuhara (col. 3, lines 10 to col. 4, line 25; fig. 5) who gives more insight about the sobel filter associated with pixels. Yuhara (fig. 5) shows a captured image which has been divided (segmented) into subimages (pixels) generating a spatial matrix image such as a 3 by 3 or a 200 by 140 or a 10 by 10 matrix of a spatial image. Therefore, Kamei inherently disclose the limitations above.

Kamei discloses stored images of passengers which will imply that the images must have been captured and stored. Kamei is not quite clear about capturing an image of *a plurality of occupant seating areas*; however Breed et al (col. 8, lines 25-27; col. 9, lines 1-5, 10-15, 24-27; col. 10, lines 9-11; figs. 1, 2) discloses capturing an image of a plurality of occupant seating areas. Therefore, it would have been obvious to one of ordinary skill in the art of vehicle occupant identification to modify Kamei as taught by Breed et al for the purpose of providing an occupant vehicle monitoring system which is not affected by temperature or thermal gradients, and to track occupants in a sufficiently short time during a crash, Breed (col. 9, lines 62-67).

Regarding claim 21, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 20 wherein said step d) further includes the step of analyzing the low-level descriptors based upon a set of training data.

Regarding claim 22, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 21 further including the step of creating the set of training data by capturing a plurality of images of known occupant classifications of the occupant area.

Regarding claim 23, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 20 wherein said steps d) and e) are performed using a neural network.

Regarding claim 24, Kamei (figs. 1-3, 6-8; col. 6, line 11-26; 18-39, 51-67; col. 7, lines 1-14) in view of Breed disclose the method of claim 20 wherein said step d) is based upon system parameters including an orientation or a location from which the image is captured relative to the occupant area.

Response to Arguments

6. Applicant's arguments filed 5/13/08 have been fully considered but they are not persuasive.

7. Applicant argues that the claims have been amended with the new limitation, "dividing each of the plurality of occupant areas in the image into a plurality of sub-images". The examiner disagrees and notes that the limitation does not change the scope of the claims because the claim image is an image of "the plurality of occupant areas". Breed anticipates the limitations because Breed captures said images and digitizes the images, which digitizing an image refers to breaking up the images into pixels or sub-images.

Applicant further argues that Kamei does not divide the images into a plurality of sub-images of predetermined regions. The examiner disagrees and notes that Kamei discloses:

"a). capturing an image of an occupant seating area (abstract; col. 3, lines 59-63; col. 4, lines 3-6; col. 5, lines 47-56; col. 6, lines 33-39) in a vehicle;

b). dividing the image into a plurality of subimages of predetermined spatial regions (col. 6, lines 18-39);

c). generating a spatial feature matrix of the image based upon the plurality of subimages (pixels, col. 6, lines 18-39);

d). analyzing the spatial feature matrix (col. 6, lines 11-39); and

e). classifying a plurality of occupants (col. 6, lines 51 to col. 7, lines 14) in the occupant areas based upon said step d).

Kamei discloses pixels and a Sobel filter (col. 6, lines 27-39. A sobel filter inherently divides a captured image into subimages (known as pixels). Applicant is referred to Yuhara (col. 3, lines 10 to col. 4, line 25; fig. 5) who gives more insight about the sobel filter associated with pixels. Yuhara (fig. 5) shows a captured image which has been divided (segmented) into subimages (pixels) generating a spatial matrix image such as a 3 by 3 or a 200 by 140 or a 10 by 10 matrix of a spatial image. Therefore, Kamei inherently disclose the limitations above."

Applicant's further argues that in Kamei the segmentor outputs an "enhanced image" and that the image is "(singular)" with edge detection, and further that the "sub-image space 620" is not a plurality of divided images. The examiner disagrees and notes that applicant has admitted that Kamei discloses the terms, "a segmentor" and "edge detection". Thus by applicant's

admission it is believed that Kamei anticipates the limitations because these are terms are terms used in digital image processing, wherein the images are divided into pixels or sub-images.

Applicant further argues that Kamei does not disclose "a spatial feature matrix of the image". The examiner disagrees and notes that Kamei discloses pixels and a Sobel filter (col. 6, lines 27-39. A sobel filter inherently divides a captured image into subimages (known as pixels). Applicant is referred to Yuhara (col. 3, lines 10 to col. 4, line 25; fig. 5) who gives more insight about the sobel filter associated with pixels. Yuhara (fig. 5) shows a captured image which has been divided (segmented) into subimages (pixels) generating a spatial matrix image such as a 3 by 3 or a 200 by 140 or a 10 by 10 matrix of a spatial image. Therefore, Kamei inherently disclose the limitations above. Applicant fialed to consider the Yuhara reference as explained above.

Applicant further argues that The combination of Kamei and Breed are improper because Kamei is "ONLY concerned" with a front passenger seat. The examiner disagrees and notes that applicant's quotation in the last two lines on page 6 indicate "a vehicle passenger seat". The examiner notes that vehicle passengers also are in the back seats of a vehicle. Therefore the citation of the term "ONLY" is mischaracterized. In addition, the invention in Kamei did not use the term --consists-- implying that the invention can be modified. Thus the combination is proper and the 103 rejection is maintained.

It is therefore believed that all the rejections are proper and thus stand.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONNIE MANCHO whose telephone number is (571)272-6984. The examiner can normally be reached on Mon-Thurs: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tran Khoi can be reached on 571-272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ronnie Mancho
Examiner
Art Unit 3664

8/16/2008

/KHOI TRAN/

Supervisory Patent Examiner, Art Unit 3664